North Sebago Quadrangle, Maine

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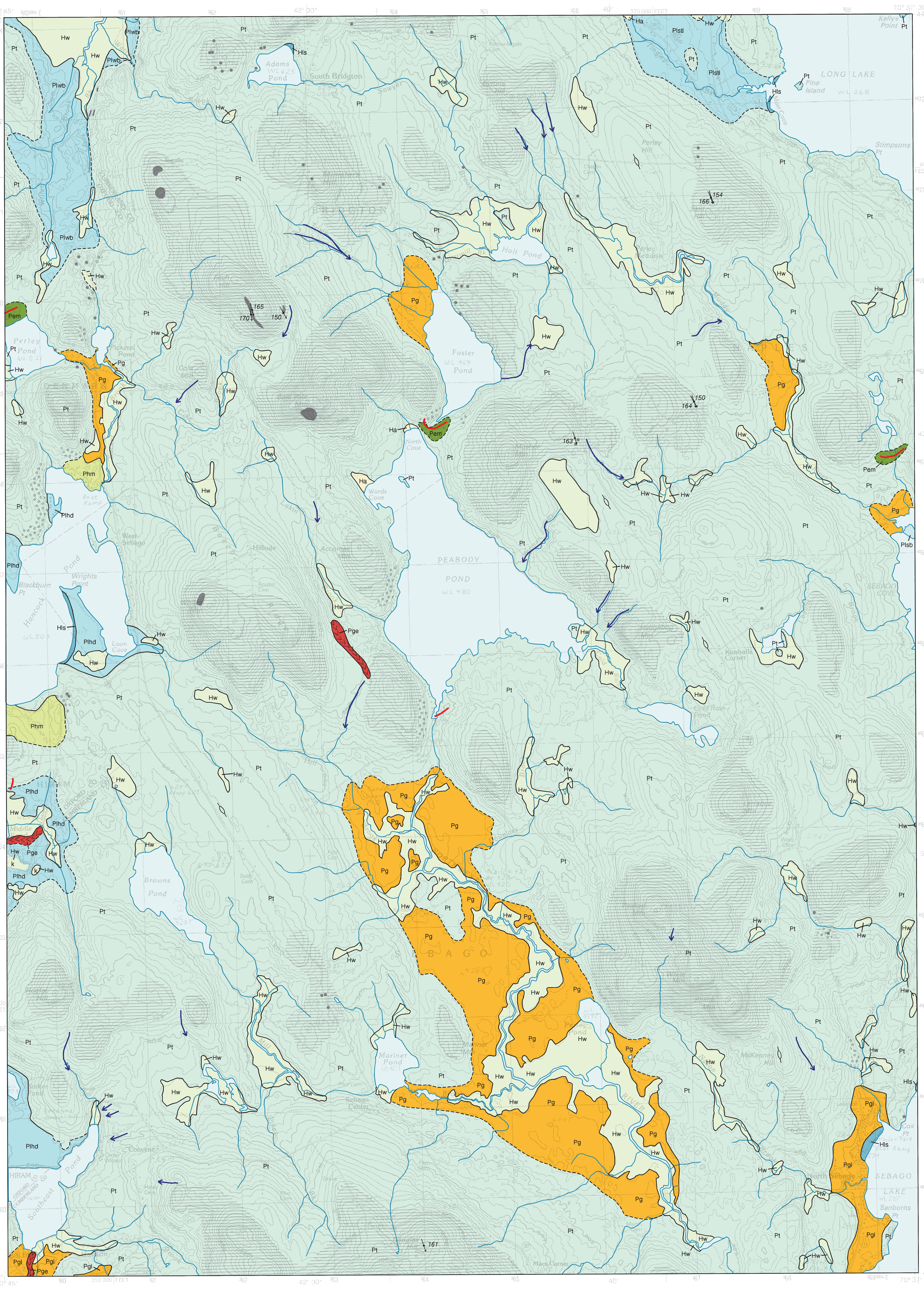
For additional information, see Open-File Report 97-71.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by Carolyn A. Lepage completed during the 1996 field season; funding for this work provided by the U. S. Geological Survey STATEMAP program.

Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey North Sebago quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

Note: The first letter of each map unit indicates the general age of the unit:
H = Holocene (postglacial deposit; formed during the last 10,000 years).
P = Pleistocene (deposit formed during glacial to late-glacial time, prior to 10,000 years before present).

Ha — **Alluvium** - Sand, silt, and gravel deposited on flood plains by modern streams and rivers. May also include organic material.

Hw — **Wetland deposits** - Peat, muck, and fine-grained inorganic sediments deposited in poorly drained areas. Till, bedrock, and other materials may occur locally.

Hls — **Beach deposits** - Narrow sand and gravel deposits formed by wave and current action on modern lake shores. Mapped only along shores of Long Lake, Sebago Lake, and Hancock Pond, but may occur elsewhere, especially where shorelines have formed on glacial sand and gravel.

Plsb — **Glacial Lake Sebago bottom deposits** - Sand, silt, and silty clay deposited at the bottom of glacial Lake Sebago. Unit extends east into adjacent quadrangle.

Plsti — **Glaciofluvial and glaciolacustrine deposits of the Tingley Brook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated outwash, bottom, and shore deposits of Glacial Lake Sebago. Thickness varies.

Plwb — **Willett Brook deposits** - Ice-contact glaciolacustrine(?) sand and gravel deposited in the upper part of Willett Brook valley. Unit extends north and west into adjacent quadrangles.

Plhd — **Glacial Lake Hancock deposits** - Deltaic sand and gravel deposited in a glacial lake that occupied the valley extending north and south from Hancock Pond. Unit extends west into adjacent quadrangle where delta tops indicate lake level of about 510-530 feet (higher to north due to crustal tilt).

Pg — **Glacial sand and gravel** - Undifferentiated sand and gravel deposited near the ice margin.

Pgi — **Ice-contact deposits** - Sand and gravel deposited in contact with melting glacial ice.

Pge — **Esker deposits** - Ridges of sand and gravel deposited by meltwater streams in glacial tunnels. Unit may include some tunnel mouth lacustrine fan deposits. Chevrons indicate direction of inferred flow.

Phm — **Hummocky moraine** - Till with lumpy or knobby topography. Typically contains many boulders. Unit may include moraine ridges.

Pem — **End moraine** - Till ridges deposited at the glacier margin north of Perley Pond and Sebago Cove and south of Foster Pond.

Pt — **Till** - Loose to very compact, poorly sorted, primarily nonstratified mixture of sand, silt, and gravel-size rock debris deposited by glacial ice. May contain lenses of water-laid sediment locally.

Bedrock - Gray areas indicate individual outcrops. Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 feet thick. Not all individual bedrock exposures have been mapped.

Boulders - Areas of numerous large boulders.

Contact - Boundary between map units. Dashed where uncertain or inferred.

Moraine ridge - Line indicates crest of moraine ridge in area mapped as till.

Glacially streamlined hill - Symbol shows trend of long axis, which parallels former ice-flow direction.

135 **Glacial striation locality** - Arrows show ice-flow directions (azimuths in degrees) inferred from scratches on bedrock caused by glacial abrasion. Dot marks point of observation. Flagged trend is older.

Kettle - Depression formed by melting of buried ice and collapse of overlying sediments.

Meltwater channel - Channel eroded by glacial meltwater stream or drainage from glacial lake. Arrow shows inferred direction of former stream flow.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Lepage, C. A.,1997, Surficial geology of the North Sebago 7.5-minute quadrangle, Oxford and Cumberland Counties, Maine: Maine Geological Survey, Open-File Report 97-71, 4 p.

1. Lepage, C. A.,1998, Surficial materials of the North Sebago quadrangle, Maine: Maine Geological Survey, Open-File Map 98-187.

2. Neil, C. D., 1998, Significant sand and gravel aquifers of the North Sebago quadrangle, Maine: Maine Geological Survey, Open-File Map 98-153.

3. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)

4. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.

5. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.